

ABSTRACT OF THE DISCLOSURE

A polygon scanning system and method is provided wherein two or more light beams impinge at different incident angles on a polygon facet and are sequentially used for scanning the surface of a substrate as the polygon is rotated. Embodiments include a system comprising a polygon having a reflective facet, a rotation mechanism for rotating the polygon, and a light source for directing a plurality of light beams to impinge on the facet such that each light beam impinges on the facet at a different incident angle. Each light beam is reflected by the facet to scan a particular portion of a surface of a substrate during a respective time interval when the rotation mechanism is rotating the polygon. Each of the plurality of light beams is reflected onto the substrate surface using a respective portion of the facet surface, such that the sum of the respective portions of the facet surface used to reflect the light beams is a very large percentage of the total surface area. Thus, the system has a duty cycle of close to 100 percent as well as a high data rate.

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